

REMARKS

This Amendment responds to the Office Action dated May 24, 2011 in which the Examiner rejected claims 17-28 under 35 U.S.C. § 103.

As indicated above, claims 17 and 23 have been amended in order to make explicit what is implicit in the claims. The amendment is unrelated to a statutory requirement for patentability.

Claim 17 claims a chemical analytic apparatus, and claim 23 claims a method of the chemical analytic apparatus. The method and apparatus and method include conveying a droplet, into which ultrafine particles are mixed, through another liquid that differs from the droplet and that is fixed in a fixed place. The droplet is conveyed for processing of chemical analysis by a magnetic field to which the magnetic ultrafine particles are attracted. The processing of the chemical analysis is performed by conveying the droplet with the magnetic ultrafine particles through plural bulkheads projecting from a top side of a processing means through plural small compartments which communicate with one another. The droplets with the magnetic ultrafine particles are conveyed through a liquid which is fixedly placed.

By (a) passing the droplet containing the magnetic ultrafine particles through a stationary liquid, and (b) passing the droplet through plural bulkheads projecting from a top side of a processing means into plural small compartments, as claimed in claims 17 and 23, the claimed invention provides a chemical analytical apparatus and method which can be miniaturized, making it a low cost and affordable apparatus. The prior art does not show, teach or suggest the invention as claimed in claims 17 and 23.

Claims 17-28 were rejected under 35 U.S.C. § 103 as being unpatentable over *Blankenstein* (U.S. Patent No. 6,432,630), in view of *Mehta, et al.* (U.S. Patent No. 6,632,655), and further in view of *Ishiguro, et al.* (JP2003-050245).

Blankenstein appears to disclose in Figure 1 a micro flow system 1 having three inlets and two outlet ports. The sample 9 containing particles enters the separation flow channel 5 through a central inlet port 2 and is continuously guided through the separation flow channel 5 of the micro flow region 1 by two guiding buffers 10 and 11, each of which enters the separation flow channels through inlet ports 3 and 4, respectively. The field generating means comprises a magnet 8 is located adjacent to the flow channel 5 and generates a magnetic field across the flow channel 5. When the sample 9 containing particles passes the magnetic field, the magnetically stained particles 12 are drawn into the guiding buffer 10 and leave the flow channel 5 together with the guiding buffer 10 through the sort outlet 6 while non-labeled cells 13 which are not influenced by the magnetic force remain in the fluid 9 leaving the flow channel 5 through the waste outlet 7 (Column 12, line 62 – Column 13, line 12).

Thus, *Blankenstein* merely discloses particles 9 which move due to flowing buffers 10 and 11. Thus, nothing in *Blankenstein* shows, teaches or suggests droplets containing magnetic ultrafine particles conveyed through a stationary liquid as claimed in claims 17 and 23. Rather, *Blankenstein* teaches away from the claimed invention since the guiding buffers 10 and 11 also flow through the flow channel 5.

Furthermore, *Blankenstein* discloses that the magnet 8 is fixed. Thus, nothing in *Blankenstein* shows, teaches or suggests a moving conveyance means as claimed in claims 17 and 23. Rather, *Blankenstein* teaches away from the claimed invention since the magnet is fixed.

Mehta, et al., et al. appears disclose is Figure 2 a microfluidic device 201 comprise channel 210. In a bottom region of channel 210 several particle retention regions 220-250 retain particle sets 260-290. The particle sets 260-290 are optionally magnetic and held in place by application of an appropriate magnetic field. In other embodiments, channel 210 is of sufficient

narrow dimension that members of the particle sets 260-290 cannot exit retention regions 220-250. (Column 16 line 57-Column 17 line 1).

Thus, *Mehta, et al.* merely discloses particle retention regions retaining particle sets by a magnetic force. Nothing in *Mehta, et al.* shows, teaches or suggests conveying droplets containing magnetic ultrafine particles through a liquid that is fixed in a fixed place as claimed in claims 17 and 23. Rather, *Mehta, et al.* teaches away from the claimed invention and merely discloses retaining the particles within retention regions by a magnetic force.

Additionally, as shown in Figure 2, of *Mehta, et al.*, the channel 210 contains retention regions. Thus, nothing in *Mehta, et al.* shows, teaches or suggests plural bulkheads projecting into a processing means from a top side to form plural small compartments as claimed in claims 17 and 23. Rather, the channel 210 of *Mehta, et al.* contains a plurality of retention regions.

Finally, *Mehta, et al.* merely discloses at least one member of the particle array is transported within a first of the at least two channels to a point proximal to or within the channel intersection. At least one of the reagents is transported through a second of the at least two intersecting microchannels to a point proximal to or within the channel intersection. The at least one member of the particle array and the at least one reagent are contacted proximal to or within the channel intersection (Column 3, lines 25-34).

Thus, *Mehta* clearly discloses that the reagent flows through the channels. Thus, nothing in *Mehta* shows, teaches or suggests droplets containing the magnetic ultrafine particles are conveyed through a stationary liquid as claimed in claims 17 and 23. Rather, *Mehta* teaches away from the claimed invention since the reagent also flows through a channel.

Ishiguro, et al. appears to disclose a magnetic fluid is introduced through opening 10 and 11. A magnet 13 is moved right-ward whereby a magnetic fluid is introduced into micro

channels 3 and 4. TBS-BSA is introduced into openings 8 and 9. Opening 12 is closed and magnet 13 is moved left-ward whereby the TBS-BSA was introduced into each of the micro channels 3 and 4. Openings 8 and 9 are closed and opening 12 is opened. By moving magnet 13 right-ward, the respective TBS-BSA is transported to micro channels 5 and 6. Then, by moving magnet 13 right-ward, the respective TBS-BSA is mixed in micro channel 7 and moved to opening 20. Consequently, TBS-BSA in a required amount is recovered at the opening 12.

Thus, *Ishiguro, et al.* merely discloses that the magnetic fluid 14 is introduced into the micro channels 3 and 4 by moving the magnet 13 to the right. However, the magnetic fluid 14 causes the liquid TBS-BSA to moved to the right as a result of the magnetic fluid 14 being moved to the right by the magnet 13. Thus, TBS-BSA as well as the magnetic fluid are both moved. Thus, nothing in *Ishiguro, et al.* shows, teaches or suggests a droplet containing magnetic ultrafine particles is conveyed through another liquid which is fixed in a fixed place as claimed in claims 17 and 23. Rather, both the magnetic fluid and the introduced fluid in *Ishiguro, et al.* are conveyed together.

A combination of *Blankenstein, Mehta, et al.* and *Ishiguro, et al.* all flow a specimen through a flowing liquid. Thus, nothing in the combination of the references shows, teaches or suggests conveying a droplet containing magnetic ultrafine particles through a stationary liquid as claimed in claims 17 and 23. Furthermore, none of the references show, teach or suggest plural bulkheads projecting into a processing means from a top side to form plural small compartments which communicate with each other as claimed in claims 17 and 23. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 17 and 23 under 35 U.S.C. § 103.

Claims 18-22 and 24-28 depend from claims 17 and 23 and recite additional features.

Applicants respectfully submit that claims 18-22 and 24-28 would not have been obvious within the meaning of 35 U.S.C. § 103 over *Blankenstein, Mehta, et al.* and *Ishiguro, et al.*, at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 18-22 and 24-28 under 35 U.S.C. § 103.

New claims 29-35 have been added and recites additional features. Applicants respectfully submit that new claims 29-35 are also in condition for allowance.

Thus, it now appears that the application is in condition for a reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

CONCLUSION

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 50-0320.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 50-0320.

Respectfully submitted,

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Date: August 23, 2011

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